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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/593,470	09/19/2006	Yasuhiro Miyamoto	Q97231	2760

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EXAMINER	
KIM, JOHN K	

ART UNIT	PAPER NUMBER
2834	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/593,470	MIYAMOTO ET AL.	
	Examiner	Art Unit	
	JOHN K. KIM	2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 July 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 3-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 September 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *9/19/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This Office action is in response to papers filed on 10 July 2008. Amendments made to the claims and Applicant's remarks have been entered and considered.

2. Claims 1 and 3-8 are pending and are presented for examination. Claim 1 has been amended, claim 2 has been cancelled.

Response to Arguments

3. Applicant's arguments filed have been fully considered but they are not persuasive.

4. The argument is that the prior art (Tsuboi) does not teach a magnetic-pole detector arranged on an opposite side of the linear scale. It is related to claim 2 in original disclosure. The claim 2 is copied below.

"*2. The moving-magnet-type linear slider according to claim 1, characterized in that the moving-magnet-type linear slider further comprises: a magnetic-pole detector which detects a relative position of the armature and the permanent magnet for a magnetic field arranged on an opposite side of the linear scale, wherein the magnetic-pole detector includes a hall element fixed on the fixed base side, and a magnetic-pole detector fixed on the table side so as to have an equal pitch as the permanent magnet for a magnetic field.*"

In the sentence, the claim defines said magnetic-pole detector is arrange on an opposite side of the linear scale. It is a broad claim. In the disclosure, the linear scale (5) is fixed on the table (3) and also it is located on left side of the table. Thus, if the device is located on either opposite to table or right side of table, it is on the opposite

side of the linear scale. In Tsuboi, the device is located on opposite side of table in terms of vertical direction.

Response to Amendment

5. The claim 1 has been amended with added new limitations. The claim 1 has new limitation which is '… with respect to the table'. It is still ambiguous whether vertical or horizontal direction in terms of the table. However, since the applicant argued the examiner's interpretation of vertical direction and also in view of Fig. 5 which is one embodiment, the examiner interprets the applicant limits the claim to horizontal direction. As the result, claim 1 rejection is changed accordingly as listed below.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claims 1, 3-4 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuboi et al (US 2001/0048249) in view of Shimura (US 6441515).

As for claim 1, Tsuboi teaches (in Figs. 1-13) a moving-magnet-type linear slider (1) comprising: a linear guide (4) which movably supports and guides left and right sides of a table (3) arranged parallel with and opposite to a fixed base (2) wherein the linear guide includes a slider (6) and a guide rail (5); a linear motor which reciprocally moves the table (3) in a longitudinal direction over the guide rail (5) relative to the fixed base (2); and detecting means (14-16) for detecting a relative position of the table (3) and the fixed base (2); a magnetic-pole detector (34) which detects a relative position of the armature and the permanent magnet for a magnetic field, wherein the magnetic-pole detector (34) includes a hall element (of the Hall IC) fixed on the fixed base side (2), and a magnetic-pole detector magnet (13) fixed on the table side (3) so as to have an equal pitch as the permanent magnet for a magnetic field characterized in that the linear motor comprises an armature (10) having an multi-phase armature winding wire (12) wound on an armature core (11) serving as a magnetic circuit fixed on the fixed base (2), and a permanent magnet (13) for a magnetic field, the permanent magnet (13) being attached on the table (3) and arranged opposite to the armature (10) interposing a magnetic gap, the detecting means comprises a linear scale portion (15) fixed to the table (3), and a sensor head (16) which detects the linear scale (15), the a sensor head (16) being attached on a fixed base (2) side, and the armature (10) is arranged such that a thrust

center axis where a thrust of the armature (10) is generated is substantially coincident with a center axis of a space between the left and right guide rails (5). Tsuboi, however, failed to teach or suggest a magnetic-pole detector arranged on an opposite side of the linear scale with respect to the table. In the same field of endeavor, Shimuraq teaches (in Figs. 6 and 12) a magnetic-pole detector (17, see col. 6, line 41-45) arranged on an opposite side of the linear scale (10) with respect to the table. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the teaching of Shimura with that of Tsuboi for reduction of magnetic influence in sensing by keeping away from stator coil flux.

As for claim 3, Tsuboi and Shimura teach the claimed invention as applied to claim 1 above. Tsuboi further teaches (in Fig. 1) characterized in that the fixed base (2) is provided with a mounting hole (four mounting holes at each outer corners) for attaching the moving-magnet-type linear slider to an external apparatus, wherein the mounting hole is formed in a position outside or inside of the guide rail (5).

As for claim 4, Tsuboi and Shimura teach the claimed invention as applied to claim 1 above. Tsuboi further teaches (in Fig. 1) wherein the sensor head (16) includes a serial-signal conversion circuit which converts a scale signal of the linear motor output from the detecting means into a serial signal. [0022]

As for claim 7, except claim dependency, claim 7 contains the same limitation as claim 4 and is rejected for the same reason set forth in connection with the rejection of claim 4 above.

9. Claims 5 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuboi et al (US 2001/0048249) in view of in view of Shimura (US 6441515) and in further view of Jong et al (2002 IEEE publication, "Smart Silicon Sensor – Example of Hall Effect Sensors").

As for claim 5, Tsuboi and Shimura teach the claimed invention as applied to claim 4 above. Tsuboi further teaches [0057] combining with control system including personal computers, sequencers and drivers, which implies capability that the motor parameter is also converted into a serial signal by the serial-signal conversion circuit, and the serial signal is transmitted to the driver. Tsuboi, however, failed to teach or suggest the sensor head has a memory into which a motor parameter of the linear motor is input. In the same field of endeavor, Jong teaches (in Fig. 1) the sensor head has a memory. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the teaching of Jong with that of Tsuboi for compact built-in scale converter by programmable sensor.

As for claim 8, except claim dependency, claim 8 contains the same limitation as claim 5 and is rejected for the same reason set forth in connection with the rejection of claim 5 above.

10. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuboi et al (US 2001/0048249) in view of in view of Shimura (US 6441515) and in further view of Yagoto et al (US 5801462).

Tsuboi and Shimura teach the claimed invention as applied to claim 1 above. Tsuboi further teaches (in Fig. 1) the linear scale mounts thereon an optical encoder (14), which commonly indicates an absolute type encoder and absolute type encoder is most popularly used, which detects a position signal of the linear-motor mover [0022], but failed to explicitly teaches it is an absolute-type encoder. In the same field of endeavor, Yagoto teaches use of absolute-type encoder for sensing the position of slider. [col. 9, line 13-27] Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the teaching of Yagoto with that of Tsuboi for simpler computation and comparison of position signal.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOHN K. KIM whose telephone number is (571)270-5072. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren Schuberg can be reached on 571-272-2044. The fax phone number for the organization where this application or proceeding is assigned is 571-270-6072.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JK

/Tran Nguyen/
Primary Examiner, Art Unit 2834